

CLAIMS

What is claimed is:

- 1 1. A database appliance, comprising:
2 a database server; and
3 a special purpose operating system, generated by modifying a general purpose
4 operating system, whose configuration is dictated based on a set of services
5 required by the database server.
- 1 2. The database appliance of Claim 1, wherein the database server was generated from
2 another database server by modifying the code of the other database server to
3 optimize the code for execution on said database appliance.
- 1 3. The database appliance of Claim 1, wherein the hardware for said database appliance
2 is selected and configured to optimize performance of one or more services to be
3 performed by the database server.
- 1 4. The database appliance of Claim 1, wherein the hardware for said database appliance
2 is selected and configured to optimize a cache hit ratio experienced by the database
3 appliance.
- 1 5. The database appliance of Claim 1, wherein the database server is a special purpose
2 database server, wherein features and configuration of the special purpose operating
3 system are dictated by the special purpose database server and supporting
4 components, and wherein the special purpose database server is specially adapted
5 based upon the services required by a specific type of database usage.

- 1 6. The database appliance of Claim 1, wherein the special purpose operating system
2 performs process scheduling based on shares of CPU time.
- 1 7. The database appliance of Claim 1, further comprising:
2 a self-configuration module that is capable of performing the steps of:
3 detecting an environment in which the database appliance is being used; and
4 configuring the database appliance based upon the detected environment.
- 1 8. The database appliance of Claim 1, wherein the special purpose operating system
2 employs a microkernel and an associated service module.
- 1 9. The database appliance of Claim 1, wherein the database server includes a mechanism
2 for reading resource information within an address space of a kernel of the operating
3 system without causing a context switch to the operating system kernel address space.
- 1 10. The database appliance of Claim 5, wherein said type of database usage is one of an
2 online transaction processing application and an online analytical processing
3 application, wherein said database appliance is configured with an amount of
4 resources dedicated to I/O services that is based on whether said specific type of
5 database usage is an online transaction processing application or an online analytical
6 processing application, and wherein said database appliance is configured with an
7 amount of resources dedicated to computational services that is based upon whether
8 said specific type of database usage is an online transaction processing application or
9 an online analytical processing application.

1 11. The database appliance of Claim 5, wherein said specific type of database usage is an
2 online transaction processing application and said database appliance is configured
3 with relatively more resources dedicated to I/O services and relatively fewer resources
4 dedicated to computational services.

1 12. A database appliance, comprising:
2 an operating system; and
3 a database server generated from another database server by modifying the code of
4 said other database server to optimize the code for execution on said database
5 appliance,
6 wherein the database server obtains services of said operating system by making calls
7 to said operating system during execution of said database server.

1 13. The database appliance of Claim 12, wherein said operating system is a special
2 purpose operation system whose code has been optimized for use as part of said
3 database appliance.

1 14. The database appliance of Claim 12, further comprising:
2 a self-configuration module that is capable of performing the steps of:
3 detecting an environment in which the database appliance is being used; and
4 configuring the database appliance based upon the detected environment.

1 15. The database appliance of Claim 12, wherein the database appliance allocates a CPU
2 share for a process and assigns a priority to the process based on the changing
3 resource demands associated with the process.

- 1 16. A method for constructing a database appliance, comprising:
2 installing on a computer readable medium accessible to one or more processors a
3 database server; and
4 installing on the computer readable medium a special purpose operating system,
5 generated by modifying a general purpose operating system, whose
6 configuration is dictated based on a set of services required by the database
7 server.
- 1 17. The method of Claim 16, wherein the database server was generated from another
2 database server by modifying the code of the other database server to optimize the
3 code for execution on said database appliance.
- 1 18. The method of Claim 16, wherein the hardware for said database appliance is selected
2 and configured to optimize performance of one or more services to be performed by
3 the database server.
- 1 19. The method of Claim 16, wherein the hardware for said database appliance is selected
2 and configured to optimize a cache hit ratio experienced by the database appliance.
- 1 20. The method of Claim 16, wherein the database server is a special purpose database
2 server, wherein features and configuration of the special purpose operating system are
3 dictated by the special purpose database server and supporting components, and
4 wherein the special purpose database server is specially adapted based upon the
5 services required by a specific type of database usage.

- 1 21. The method of Claim 16, wherein the special purpose operating system performs
2 process scheduling based on shares of CPU time.
- 1 22. The method of Claim 16, wherein the method further comprises:
2 installing on the computer readable medium a self-configuration module that is
3 capable of performing the steps of:
4 detecting an environment in which the database appliance is being used; and
5 configuring the database appliance based upon the detected environment.
- 1 23. The method of Claim 16, wherein the special purpose operating system employs a
2 microkernel and an associated service module.
- 1 24. The method of Claim 16, wherein the database server includes a mechanism for
2 reading resource information within an address space of a kernel of the operating
3 system without causing a context switch to the operating system kernel address space.
- 1 25. The method of Claim 20, wherein said type of database usage is one of an online
2 transaction processing application and an online analytical processing application,
3 wherein said database appliance is configured with an amount of resources dedicated
4 to I/O services that is based on whether said specific type of database usage is an
5 online transaction processing application or an online analytical processing
6 application, and wherein said database appliance is configured with an amount of
7 resources dedicated to computational services that is based upon whether said specific
8 type of database usage is an online transaction processing application or an online
9 analytical processing application.

1 26. The method of Claim 20, wherein said specific type of database usage is an online
2 transaction processing application and said database appliance is configured with
3 relatively more resources dedicated to I/O services and relatively fewer resources
4 dedicated to computational services.

1 27. A method for constructing a database appliance, comprising:
2 installing on a computer readable medium accessible to one or more processors an
3 operating system; and
4 installing on the computer readable medium a database server generated from another
5 database server by modifying the code of said other database server to
6 optimize the code for execution on said database appliance,
7 wherein the database server obtains services of said operating system by making calls
8 to said operating system during execution of said database server.

1 28. The method of Claim 27, wherein said operating system is a special purpose operation
2 system whose code has been optimized for use as part of said database appliance.

1 29. The method of Claim 27, wherein the method further comprises:
2 installing on the computer readable medium a self-configuration module that is
3 capable of performing the steps of:
4 detecting an environment in which the database appliance is being used; and
5 configuring the database appliance based upon the detected environment.

- 1 30. The method of Claim 27, wherein the database appliance allocates a CPU share for a
- 2 process and assigns a priority to the process based on the changing resource demands
- 3 associated with the process.